

Claims

1 1. A needle guiding apparatus comprising:

2 a base defining an opening therethrough;

3 a guide platform disposed adjacent to the opening, the guide platform being rotatable
4 about a rotation axis, the rotation axis extending through the opening and having a common point
5 along the rotation axis;

6 a pivot disposed at least partially within the guide platform and being rotatable about a
7 pivot axis that is substantially perpendicular to the rotation axis; and

8 a guide shaft disposed at least partially within the pivot and extending along a
9 longitudinal axis from a first end of the guide shaft to a second end of the guide shaft, the
10 longitudinal axis intersecting with the rotation axis at the common point, the guide shaft
11 comprising a radiopaque material between the first end and a locus along the guide shaft normal
12 to the longitudinal axis at the common point, the radiopaque material extending to the locus, the
13 locus located immediately adjacent to a material being less radiopaque than the radiopaque
14 material.

1 2. The apparatus of claim 1 wherein the common point is located at the second end.

2 3. The apparatus of claim 1 wherein the pivot axis intersects the rotation axis at the
3 common point.

4 4. The apparatus of claim 1 wherein the guide shaft comprises an inner wall of the
5 pivot forming a bore.

6 5. The apparatus of claim 1 wherein the guide shaft is disposed at least partially
7 within an inner wall in the pivot forming a bore.

8 6. The apparatus of claim 1 wherein the entire guide shaft between the first end and
9 the locus comprises the radiopaque material.

10 7. The apparatus of claim 1 wherein the guide shaft is rotatable about the rotation
11 axis and the pivot axis.

12 8. The apparatus of claim 7 further comprising a guide rod that is connected to the
13 pivot and that is rotatable about the rotation axis and the pivot axis to transfer rotational
14 movement to the guide shaft.

1 9. The apparatus of claim 8 further comprising a guide rod lock for preventing
2 movement of the pivot.

1 10. The apparatus of claim 1 further comprising a grid disposed about the rotation
2 axis.

1 11. The apparatus of claim 1 further comprising a shaft connected to the base, the
2 shaft extending along a shaft axis perpendicular to the rotation axis.

1 12. The apparatus of claim 11 further comprising an outer rim disposed about the
2 base, the outer rim being rotatable around the shaft axis.

1 13. The apparatus of claim 12 further comprising an outer rim lock for preventing
2 relative movement between the outer rim and the base.

1 14. The apparatus of claim 1 further comprising a radiopaque point disposed
2 proximate the guide platform.

1 15. The apparatus of claim 1 further comprising a radiopaque line segment disposed
2 proximate the guide platform.

1 16. A method of guiding a needle to a target, the method comprising the steps of:
2 positioning a fluoro axis in a first fluoro position intersecting a target, the fluoro axis defined by
3 an energy emitter at a first point and an energy receiver at a second point;

4 selecting a starting point on a needle guiding apparatus comprising:

5 a guide platform being rotatable about a rotation axis, the rotation axis having a
6 common point along the rotation axis,

7 a pivot disposed at least partially within the guide platform and being rotatable
8 about a pivot axis that is substantially perpendicular to the rotation axis,

9 a guide shaft disposed at least partially within the pivot and extending along a
10 longitudinal axis from a first end of the guide shaft to a second end of the guide shaft, the
11 longitudinal axis intersecting with the rotation axis at the common point, the guide shaft
12 comprising a radiopaque material between the first end and a locus along the guide shaft
13 normal to the longitudinal axis at the common point, the radiopaque material extending to
14 the locus, the locus located immediately adjacent to a material being less radiopaque than
15 the radiopaque material,

16 the starting point disposed adjacent to the rotation axis, and

17 an aiming line radiating perpendicularly from the rotation axis;
18 positioning the starting point in a first imaging position, wherein the fluoro axis intersects
19 the starting point;
20 positioning the fluoro axis in a second fluoro position intersecting the common point and
21 the target;
22 positioning the guide platform such that the aiming line substantially aligns with the
23 starting point; and
24 positioning the guide shaft such that the longitudinal axis is parallel with the fluoro axis
25 in the second fluoro position.

1 17. The method of claim 16 further comprising inserting a needle through the guide
2 shaft along the longitudinal axis.

3 18. The method of claim 16 further comprising viewing a device for displaying a
4 visual representation of radiopaque material between the energy emitter and the energy receiver.

5 19. The method of claim 16 wherein the step of positioning the guide platform such
6 that the aiming line substantially aligns with the starting point occurs prior to the step of
7 positioning the second fluoro position.
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